

Application Serial No. 10/582,700
Reply to Office Action dated March 31, 2009
Amendment dated June 30, 2009

REMARKS

This Amendment responds to the Office Action mailed March 31, 2009. Claims 1, 2, and 4-25 remain pending in the application and stand rejected. Claims 16 and 20 have been amended herein. Applicants respectfully request reconsideration in view of the foregoing amendments and the following remarks.

Claim Objections

Claims 20 and 25 are objected to for allegedly failing to further limit the subject matter of claim 16. Claim 16 has been amended, as discussed more fully below, to clarify that fluid isolation is maintained between the air in the cabin of the aircraft and the warm waste air in the hollow chambers of the panels that form the floor. In view of the amendment to claim 16, Applicants assert that claims 20 and 25 do further limit independent claim 16. Specifically, claim 20 recites that "the warm waste air flows out into the aircraft fuselage after having flowed through the panels," and claim 25 recites "directing air from the first hollow chambers into the cabin or outside the aircraft after the warm waste air has cooled." (Emphasis added.) Claim 20 has been amended for consistency of the claim language. Accordingly, Applicants respectfully request that the objections to claims 20 and 25 be withdrawn.

Claims Rejected Under 35 U.S.C. §112

Claims 16-25 stand rejected under 35 U.S.C. §112, first paragraph, with respect to the claim language relating to fluid isolation between warm waste air and air in a

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cabin of the aircraft. Claim 16 has been amended herein to clarify that fluid isolation is maintained between "the warm waste air in the hollow chambers through the panels forming the floor and air in a cabin of the aircraft." Support for this amendment to claim 16 can be found with reference to the published application at paragraphs 0036 and 0037. Accordingly, the claims comply with §112. Moreover, Applicants assert that the Specification describes the claimed invention in sufficient detail that persons skilled in the art would understand after having read the Specification, particularly paragraphs 0036 and 0037, that Applicants had possession of the claimed invention at the time of filing. Specifically, paragraph 0036 states:

[t]he air takes heat from the electronic equipment and flows as warm waste air through the feed line 28 into the first hollow chambers 26 of the panels 18 of the floor 20. In the first hollow chambers 26, the warm waste air flows lengthwise and against the direction of flight through the whole floor 20.

Paragraph 0037 states:

"[a]t the end of the floor 20 a member which is not illustrated collects the air emerging from the first hollow chambers 26 and passes it on to a connection line 30 from which the air flows into the second hollow chambers 32, if so required by means of a second distributor, not illustrated here, which are incorporated into the floor panels 34 of the cargo hold door 24. At the end of the second hollow chambers 32, the now cooled air flows out into the aircraft fuselage 10. Alternatively, this air can be conveyed to the outside in a controlled manner.

In view of at least these paragraphs of the specification, Applicants assert that persons skilled in the art would understand that fluid isolation is maintained between the

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air in the aircraft cabin and the air in the hollow chambers of the panels (as set forth in claim 16) and that the air is directed into the fuselage or cabin only after it has passed through the panels of the cargo hold door or has been cooled, as set forth in claims 20 and 25. For at least these reasons, Applicants respectfully request that the rejections of claims 16-25 under 35 U.S.C. §112, first paragraph, be withdrawn.

Claims 20 and 25 also stand rejected under 35 U.S.C. §112, second paragraph, as allegedly being unclear with respect to the recitation of fluid isolation between warm waste air and air in a cabin of the aircraft. As discussed above, claim 16 has been amended to clarify that fluid isolation is maintained between the warm waste air in the hollow chambers through the panels forming the floor and the air in the cabin of the aircraft. Accordingly, Applicants respectfully request that the rejections of claims 20 and 25 under 35 U.S.C. §112, second paragraph, be withdrawn.

Claims Rejected Under 35 U.S.C. §102

Claim 1, 2, 9, 14-18, 24, and 25 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,819,720 to Howard. Claims 1 and 16 are the only independent claims of this rejected group. Claim 1 is directed to an aircraft floor heating comprising, among other things:

a floor within the aircraft made up of heatable panels defining a plurality of first hollow chambers formed integrally with the panels and wherein each chamber has a first end and a second end; and

a feed line operatively connected to the first ends of the first hollow chambers and providing fluid communication between the avionics bay and the first ends of the first hollow

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chambers, the feed line supplying warm waste air to the hollow chambers, the warm waste air originating from the cooling of the electronic equipment contained in the avionics bay.

Claim 16 is directed to a method for heating the floor of an aircraft, comprising:

conveying warm waste air through a first plurality of hollow chambers extending through the panels forming the floor, the warm waste air having originated from the cooling of electronic equipment of the aircraft; and

maintaining fluid isolation between the warm waste air in the hollow chambers through the panels forming the floor and air in a cabin of the aircraft.

Applicants respectfully traverse the rejections of claims 1 and 16 because Howard '720 fails to disclose each and every element recited in these claims. Specifically, Howard '720 fails to disclose "a floor . . . defining a plurality of first hollow chambers formed integrally with the panels," as recited in claim 1, or "conveying warm waste air through a first plurality of hollow chambers extending through the panels forming the floor," as recited in claim 16. In rejecting claims 1 and 16, the Examiner alleges that liner cover 36 of the skin heat exchanger of Howard '720 (the Examiner refers to reference numeral 39, which is the end of envelope 19) is a "floor" as recited in the claims, despite the fact that Howard '720 clearly defines and describes a floorboard 37. (See Howard '720 at col. 4, line 67-col. 5, line 2 and FIGS. 2 and 3.) Applicants assert that the Examiner's interpretation of liner cover 36 to be a floor as recited in the claims is contrary to the Specification and the ordinary meaning of "floor", as would be understood by persons skilled in the art having read the Application. In this regard,

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Applicants note that the present Application is directed to a device and method for floor heating in an aircraft. The Application states that an objective of the invention is to solve the problems of passengers getting cold feet, or to prevent ice from forming on the floor of an aircraft, without requiring extensive use of conventional electric heating mats covering the entire floor surface of the aircraft. (See Application at paragraph 0002.)

In contrast, Howard '720 is directed to a closed loop heat exchange system that utilizes the skin 23 of an aircraft to cool air from the aircraft's avionics bay and then return the cooled air back to the avionics bay. The air is directed to an envelope 19 disposed between the skin 23 and a liner 25 supported just above the skin 23 of the aircraft. The liner 25 and its associated cover 36 are located well below the floorboard 37. Accordingly, the feet of the aircraft's passengers would not come into contact with the line cover 36, and persons skilled in the art would not consider liner cover 36 to be a "floor" particularly in view of the clearly defined floorboard 37 in Howard '720.

Moreover, Howard '720 fails to disclose "a plurality of first hollow chambers formed integrally with the floor panels," as recited in claim 1, or "a first plurality of hollow chambers extending through the panels," as recited in claim 16. Rather, air from the avionics bay of Howard '720 is directed to envelope 19 between the skin 23 and liner 25, and flows transversely though the envelope toward collector duct 29. There are no "plural hollow chambers," just one large envelope 19. In this regard, Applicants note that posts 55 are standoffs that do not extend appreciably along the length of the aircraft, and ribs 59-64 do not extend to the skin 23. Thus, there is no structure within the envelope 19 that would form plural hollow chambers, and air flowing through

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envelope 19, therefore, cross-mixes along the way to the collector duct 29. (See, for example, Howard '720 at col. 6, lines 27-30.) For at least the reasons discussed above, Applicants respectfully request that the rejections of claims 1 and 16 be withdrawn.

Claims 2, 9, 14, and 15 each depend from claim 1, and claims 17, 18, 24, and 25 each depend from claim 16. Accordingly, claims 2, 9, 14, 15, 17, 18, 24, and 25 are in condition for allowance for at least the same reasons discussed above for independent claims 1 and 16, and Applicants respectfully request that the rejections of these claims also be withdrawn.

Claims Rejected Under 35 U.S.C. §103

Claims 1, 2, 4, 5, 9, 13-20, 24, and 25 stand rejected under 35 U.S.C. §103(a) as being unpatentable over "VR-53 and Herring's C-130 (Specific) Enlisted Aviation Warfare Specialist (EAWS) Tutorial" (hereinafter the "EAWS Document") in view of U.S. Patent No. 6,883,590 to Messana and Howard '720. Claims 6-8, 21, and 22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of the EAWS Document, Messana '590, and Howard '720, in further view of U.S. Patent No. 6,058,725 to Monfraix et al. Claims 10-12 and 23 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of the EAWS Document, Messana '590, and Howard '720, in further view of U.S. Patent Application Publication No. 2002/0056787 to Wilson , Jr. et al. Claims 1 and 16 are the only independent claims of these rejected groups.

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Applicants respectfully traverse the rejections of claims 1 and 16 because the EAWS Document fails to teach or suggest each and every element recited in claims 1 and 16, and the secondary references of Messana '590, Howard '720, Monfraix '725, and Wilson '787 fail to cure these deficiencies. Specifically, the EAWS Document only generally describes an under-floor heating consisting of ducts under the floor. No specific details are provided, and there is no mention of using warm waste air from an avionics bay. Messana '590 is directed to modular, prefabricated radiating panels made from plasterboard and insulating material. (See Messana '590 at col. 3, lines 21-24.) Accordingly, the panels of Messana '590 are not suitable for use as flooring in an aircraft. Howard '720 fails to disclose a floor defining a plurality of first hollow chambers formed integrally with the panels, or conveying warm waste air through a first plurality of hollow chambers extending through the panels forming the floor, as discussed above, and therefore does not teach or suggest a modification of the EAWS Document and/or Messana '590 that cures these deficiencies.

Monfraix '725 is directed to a system for bleeding hot air from an aircraft engine, and Wilson '787 is directed to an aircraft supplemental air heater. Neither of these references teaches or suggests conveying warm waste air originating from cooling electronic equipment through hollow chambers of floor panels to heat an aircraft floor and therefore fail to cure the deficiencies discussed above. Accordingly, Applicants respectfully request that the rejections of claims 1 and 16 under 35 U.S.C. §103(a) be withdrawn.

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Claims 2 and 4-15 each depend from claim 1, and claims 17-25 each depend from claim 16. Accordingly, claims 2, 4-15, and 17-25 are in condition for allowance for at least the same reasons discussed above for independent claims 1 and 16, and Applicants respectfully request that the rejections of these claims also be withdrawn.

Conclusion

In view of the amendments to the claims and the remarks set forth herein, Applicants believe this case is in condition for allowance and respectfully request allowance of the pending claims. If the Examiner believes any issue requires further discussion, the Examiner is respectfully asked to telephone the undersigned attorney so that the matter may be promptly resolved. The Examiner's prompt attention to this matter is appreciated.

Applicants do not believe that any fee is due in connection with this submission. However, if any fees are necessary to complete this communication, the Commissioner may consider this to be a request for such and charge any necessary fees to Deposit Account No. 23-3000.

Respectfully submitted,

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